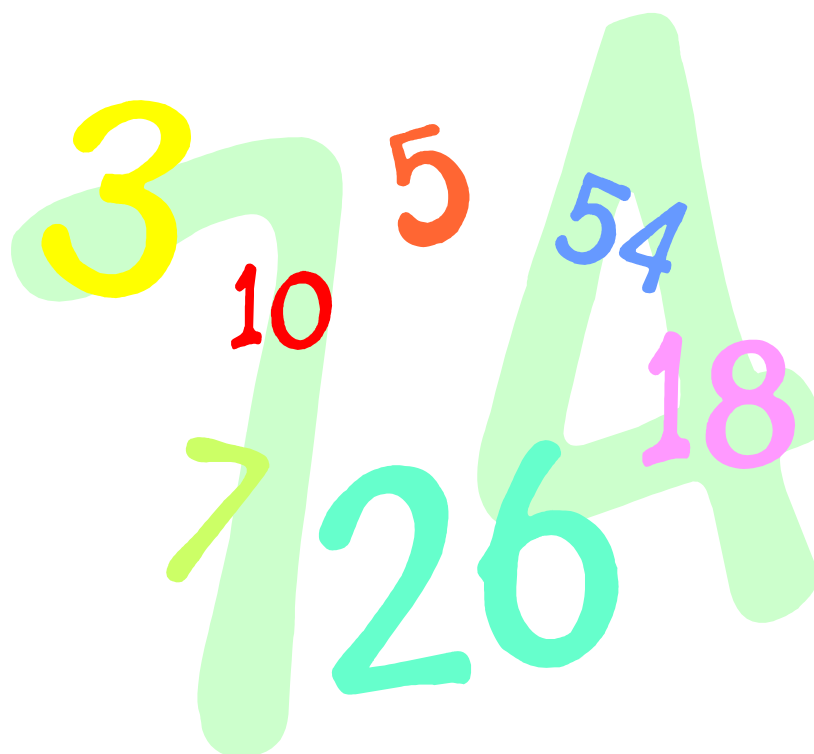


# Algebra Series

## Exam Review



### 2013 - 2014

1. Evaluate  $\sqrt{4a^2 - 44} - \sqrt[3]{b}$  where  $a = 6$  and  $b = 64$ ?
2. The weight, in pounds, of **a** wheelbarrow containing **b** bricks is given by the expression  $60 + 5b$ . What is the total weight of the wheelbarrow when it holds 30 bricks?
3. Translate the following into an algebraic expression: **"the cube root of a and b, less seven"**?
4. What is the value of the expression  $xy^2 + 6y$ , if  $x = 3$  and  $y = -4$ ?
5. Express  $\sqrt{180}$  in simplest radical form?
6. Simplify:  $\sqrt[3]{81}$
7. Simplify:  $\sqrt[3]{128}$
8. Which could be the first step in order to solve the equation below for  $b_1$ ?
 
$$A = \frac{1}{3}hf(b_1 + b_2)$$
9. The formula for the volume of a pyramid is  $V = \frac{1}{3}bh$ . Which equation solves the formula for  $h$ ?

- |                       |                       |
|-----------------------|-----------------------|
| a. $3Vb$              | b. $h = \frac{3b}{V}$ |
| c. $h = \frac{3V}{b}$ | d. $h = \frac{V}{3b}$ |

10. Write the name of the property that justifies the work being done at step 2.

$$-3(x + 4) = 18$$

STEP 1: Distributive Property

$$-3x - 12 = 18$$

$$\begin{array}{r} +12 \quad +12 \\ \hline -3x = 30 \\ -3 \quad -3 \\ \hline x = -10 \end{array}$$

STEP 2:

STEP 3: Division Property of Equality

a. Subtraction Property of Equation

b. Associative Property over Addition

c. Addition Property of Equality

d. Commutative Property over Addition

11. What is the solution of the following equation?

$$-4(x + 3) + 8 = 2(x + 4)$$

a. -6

b. -2

c. 2

d. 6

12. Solve:  $-4 + 5(x - 2) = -13 + 5x$

13. Identify the property that justifies the work between Step 2 and Step 3.

Step 1:  $-8 = -3(x - 5)$

Step 2:  $-8 = -3x + 15$

Step 3:  $-8 - 15 = -3x + 15 - 15$

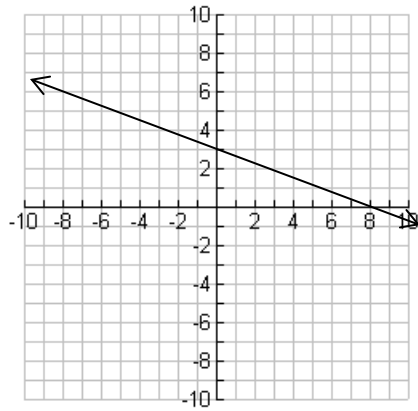
Step 4:  $-23 = -3x$

Step 5:  $\left(-\frac{1}{3}\right)(-23) = \left(-\frac{1}{3}\right)(-3x)$

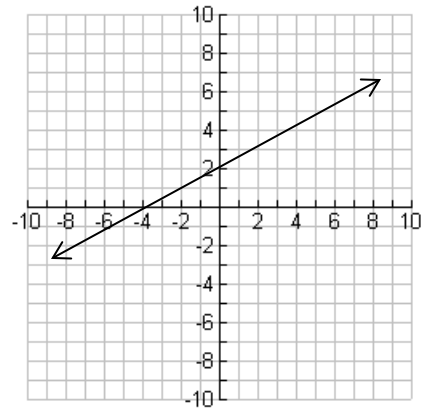
Step 6:  $\left(\frac{23}{3}\right) = x$

14. Which equation best describes the graph of the line shown below:

a.



b.



15. What is the slope of the line represented by the following equations?

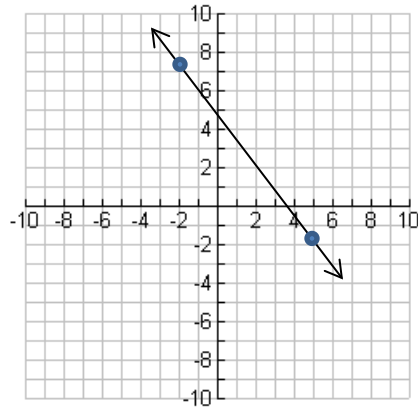
$$3y - 5 = 4x$$

16. What is the slope of a line that passes through the points?

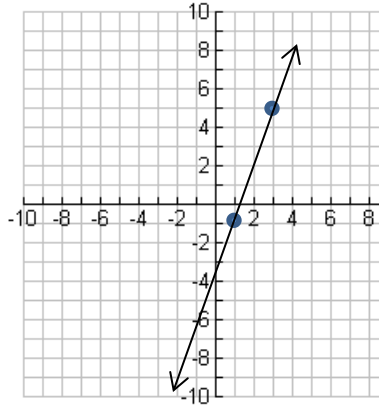
$(-1, 0)$  and  $(5, 8)$ ?

17. Which best describes the slope of the line whose graph is shown?

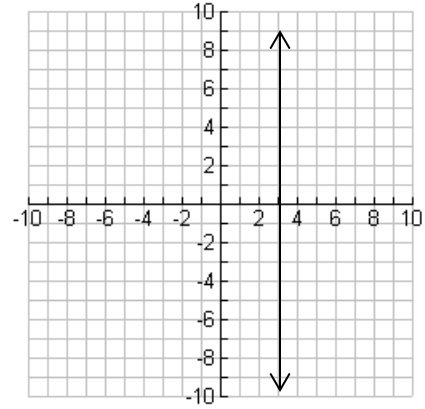
a.



b.



c.



18. Which is the equation of a line with a slope of  $-3$  that passes through the point:  $(-5, 8)$ ;

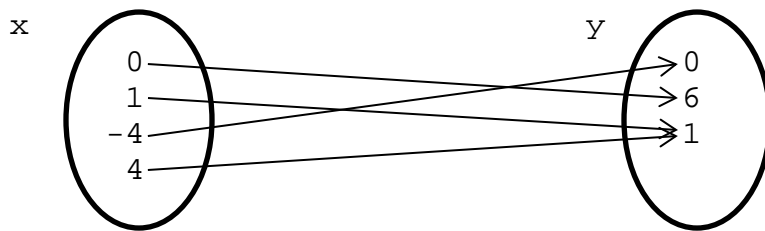
19. Which best describes the transformation that changes the graph of the line  $y = 2x$  to the graph  $y = -2x - 5$

20. Which of the following sets of ordered pairs is a function?

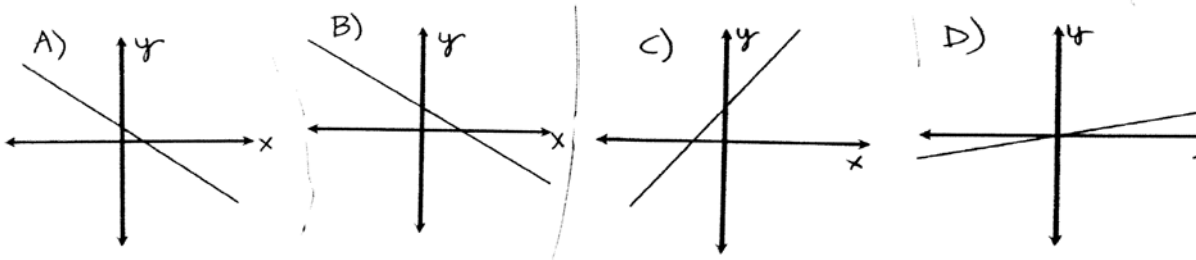
- a.  $\{(2, 1), (2, 2), (3, 4), (5, 6)\}$
- b.  $\{(-2, -1), (1, 2), (3, 4), (1, 5)\}$
- c.  $\{(1, 2), (2, 2), (3, 3), (2, 4)\}$
- d.  $\{(1, 1), (2, 1), (3, 2), (4, 4)\}$

21. If  $f(x) = x^2 + 3x + 5$ , what is the value of  $f(x)$  when  $x = -5$ ?

22. Which of the following is the range of the function represented below?



23. Which graph represents a direct variation?

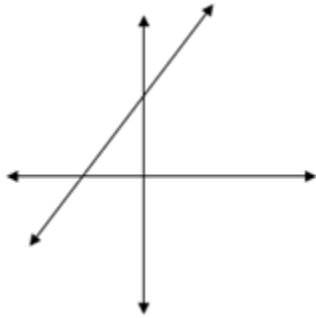


24. **a** varies directly as **b** and the constant of variation is  $\frac{1}{4}$ . Which equation represents the relationship?

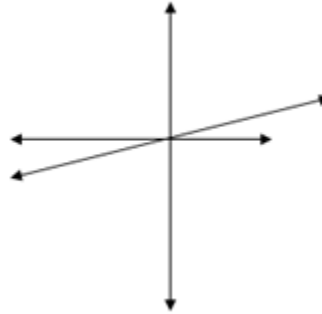
a.  $a = \frac{1}{4}b$     b.  $a = 4b$     c.  $a = b + \frac{1}{4}$     d.  $a = b - \frac{1}{4}$

25. Which graph represents a direct variation?

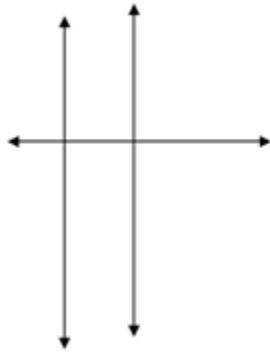
a.



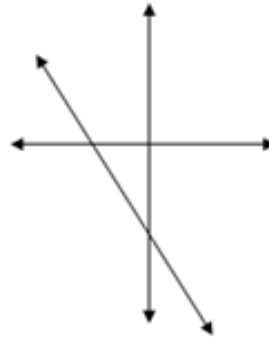
c.



b.



d.



26. Suppose **t** varies directly as **c**. Write a direct variation equation that relates **t** and **c**.

27. Is the equation  $2(2x + 4) = -10$  equivalent to  $4x + 8 = -10$ ?

Are the equations equivalent? If so, which property?

28. Using  $3x - 4(2x + 4) = 5x$ , complete the following:

$$\boxed{\phantom{0000}} = 5x$$

29. Write an equation that is equivalent to:

$$3(5 - 4x) = 5 - 4(1 - 2x)$$



30. The total cost ( $c$ ) in dollars of renting a sailboat for  $n$  days is given by the equation  $c = 130 + 40n$ . If the total cost was \$330.00, for how many days was the sailboat rented?

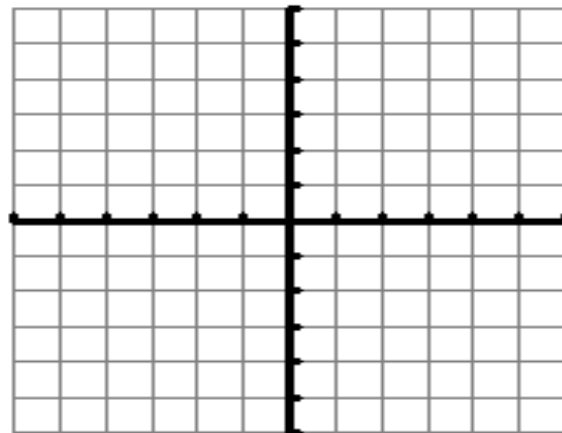
31. Evaluate  $-2|x+2|$  when  $x = -4$ .

32. What is the equation of the line that has a slope of 5 and passes through the point  $(2, -6)$ ?

33. What is the  $y$ -intercept of the graph of  $3x + 4y = 24$ ?

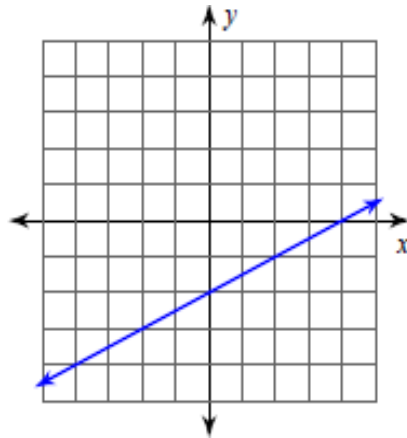
34. The relation  $\{(2, 5), (3, 6), (4, 8), (5, 6)\}$ , is it a function?

35. Graph the following equation:  $y = -3x - 4$



36. Does the point  $(5, -9)$  lie on the line  $6x + 2y = 12$ ?

37. Write the equation of the line for the graph below?



38. Write an equation for the following table in slope-intercept form.

<b>x</b>	<b>y</b>
1	3
3	-3
5	-9

39. The lengths of the sides of a triangle are  $y$ ,  $y + 2$ , and 8 centimeters. If the perimeter is 58 centimeters, what is the value of  $y$ ?

40. Write an equation of a line with an ordered pair of  $(4, 18)$  and is parallel to the equation  $y = 3x + 4$ .

41. Joe's solution to an equation is shown below.

Given:  $x + 5(x + 10) = 97$

Step 1:  $x + 5x + 10 = 97$

Step 2:  $6x + 10 = 97$

Step 3:  $6x = 97 - 10$

Step 4:  $6x = 87$

Step 5:  $\frac{6x}{6} = \frac{87}{6}$

Step 6:  $x = 14.5$

Did Joe make a mistake, if yes, at which step. If not, show your work to prove the answer.

42. Marsha just finished solving an equation and the last line of her work is  $5 = 6$ . What is the solution?

43. What is the value of  $\frac{5x-3y}{xy}$  when  $x = 2$  and  $y = -3$ ?

44. What is the domain of the relation shown below?

x	y
3	15
5	21
-2	0

45. What are the range values of the function  $f(x) = -2x^2 + 4$  for the domain values  $\{-3, 0, 1\}$ ?

46. Point A(3,4) lies on a line that represents a direct variation equation. Name some other points that line on that line.

47. What is the value of the function  $f(x) = x^2 - 3x + 2$  when  $x = -2$ ?

48. What is the equation of a line that passes through the point (3,8) and has a slope of 0?

49. What is the solution to the following equation?

$$\frac{2}{5}x - 6 = \frac{2}{3}x + 3$$

50. The data in the table show the cost of renting a bicycle by the hour, including a deposit.

**RENTING A BICYCLE**

Hours (h)	Cost in dollars(c)
2	23
5	53
8	83

If hours,  $h$ , were graphed on the horizontal axis and cost  $c$ , were graphed on the vertical axis, what would be the equation of the line that fits the data?